Matrix Addition and Scalar Multiplication

Identity Matrix

$$I_3 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Matrix Addition and Scalar Multiplication

Matrix Addition and Scalar Multiplication is the same stuff you have done for Row Reduction

An example:

For example, if

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{pmatrix} + c \begin{pmatrix} 7 & 4 & 7 \\ 0 & 0 & k \end{pmatrix} = \begin{pmatrix} 15 & 10 & 17 \\ 4 & 5 & 16 \end{pmatrix}$$

What are the values of c and k?

$$\begin{aligned} 1 + c7 &= 15 \\ c &= 2 \\ k &= 5 \end{aligned}$$

Some obvious properties,

If $r, s \in \mathbb{R}$ are scalars, and A, B, C are $m \times n$ matrices, then

1. $A + 0_{m \times n} = A$
2. $(A + B) + C = A + (B + C)$
3. $r(A + B) = rA + rB$
4. $(r + s)A = rA + sA$
5. $r(sA) = (rs)A$